WHAT IS CLAIMED IS:

1. An inflatable member formed by the process, comprising:

a) mixing a soft polymer with a multifunctional agent to form a compound;

b) extruding the compound into the inflatable member; and

c) crosslinking the inflatable member, so that the inflatable member exhibits compliant radial expansion to a desired working diameter within a first pressure range, and substantially less expansion above the first pressure range.

2. The inflatable member of claim 1, wherein the inflatable member expands to the working diameter at an inflation pressure of less than about 15 atm.

3. The inflatable member of claim 1, wherein the polymer is selected from the group consisting of polyamide-ether block copolymer, polyether-ester block copolymer, polyester-ester block copolymer, polyester-urethane block copolymer, polyether-urethane block copolymer, polycarbonate-urethane block copolymer, polyolefin, and polyolefin block copolymer.

4. The inflatable member of claim 1, wherein the polymer has a glass transition temperature of about 20 ° C to about 60 ° C.

5. The inflatable member of claim 1, wherein the process further comprises expanding the inflatable member to the working diameter and heating the expanded inflatable member to shrink the expandable member.

6. The inflatable member of claim 5 wherein the inflatable member is heated to a temperature higher than the glass transition temperature of the polymer.

7. A method for forming a growth controlled formed-in-place inflatable member, comprising:

a) mixing a soft polymer with a multifunctional agent to form a compound;

b) extruding the compound into the inflatable member with a nominal diameter; and

c) crosslinking the inflatable member with radiation prior to expansion thereof.

8. The method of claim 7, further comprising:

a) expanding the cross linked inflatable member; and

b) heating the expanded inflatable member to a temperature greater than a glass transition temperature of the polymer to shrink the inflatable member to its nominal diameter.

9. A balloon for a catheter, comprising a soft polymer blended and crosslinked with a multifunctional agent, so that the balloon exhibits compliant radial expansion to a desired working diameter within a first pressure range, and substantially less expansion above the first pressure range.

10. A balloon for a catheter, comprising longitudinally extending stiffening zones circumferentially disposed on at least a section of the balloon, which expand with adjacent portions of the balloon such that the balloon section expands to a substantially cylindrical configuration.

11. The balloon catheter of claim 10 wherein the longitudinally extending stiffening zones comprise a polymeric material coextruded as an intermittent first layer of the balloon, wherein the stiffening zone polymeric material has a higher Shore durometer hardness than a polymeric material forming a second layer of the balloon.

12. The balloon catheter of claim 10 wherein the longitudinally extending stiffening zones comprise cross-linked polymeric material.

13. The balloon catheter of claim 12, wherein the balloon comprises a polymer having a glass transition temperature of about 20 ° C to about 60 ° C.

14. The balloon catheter of claim 13, wherein the polymer is selected from the group consisting of polyamide-ether block copolymer, polyether-ester block copolymer, polyester-ester block copolymer, polyester-urethane block copolymer, polyether-urethane block copolymer, polycarbonate-urethane block copolymer, polyolefin, and polyolefin block copolymer.

15. The balloon catheter of claim 10 wherein the longitudinally extending stiffening zones are symmetrically spaced and configured to control axial growth of the balloon during inflation thereof.

16. The balloon catheter of claim 10 wherein the stiffening zones define in part an outer most edge of the expanded balloon.

17. A method for forming an inflatable member, comprising:

a) mixing a soft polymer with a multifunctional agent to form a compound;

b) forming the compound into a tubular member;

c) placing the tubular member in a mold having circumferentially spaced longitudinal windows;

d) expanding the tubular member in the mold; and

e) irradiating the mold to selectively crosslink portions of the tubular member at the longitudinal windows.

18. The method of claim 17, further comprising removing the non-crosslinked multifunctional agent from the inflatable member.

19. The method of claim 17, wherein the step of expanding the tubular member comprises expanding the tubular member to a high blow up ratio of about 6 to about 8.

20. The method of claim 17 including before (c) placing the tubular member in a first mold, and expanding the tubular member in the first mold.

21. A balloon catheter comprising a balloon having a coating of crosslinked circumferentially spaced longitudinal zones configured to control axial growth.

22. A method for forming a dimensionally stable and growth controlled inflatable member, comprising:

a) expanding a tubular member in a mold to form an inflatable member;

b) coating the inflatable member with one or more longitudinally extending stripes of a crosslinkable material on at least the working length of the inflatable member; and

c) irradiating the stripes to crosslink the crosslinkable material.

23. A method for forming a dimensionally stable and growth controlled inflatable member, comprising:

a) coating a tubular member with one or more longitudinally extending stripes of a crosslinkable material; and

b) irradiating the stripes to crosslink the crosslinkable material; and

c) expanding the irradiated tubular member in a mold to form the inflatable member.